COST *and* MANAGEMENT

THE OFFICIAL JOURNAL
OF THE
CANADIAN SOCIETY OF COST ACCOUNTANTS
INCORPORATED 1920
HEAD OFFICE, 81 VICTORIA ST., TORONTO
Telephone Elgin 8914

VOL. 3 MARCH, 1928 No. 3

CONTENTS

Extra copies of this journal may be obtained at 50c each to members and $1 each to non-members.

The Routine of an Accounts Payable Department

By W. M. WILSON

Northern Electric Company, Ltd., Montreal

(Before Montreal Chapter, November 25, 1927.)

THE object of this paper is to give the junior members of the Society an outline of the workings of an Accounts Payable System which at present controls and records the vouchering of approximately 14,000 invoices per month, and of the routine followed in compiling the purchase cost on one type of order.

This paper is divided into five sections:—

1. Branch House Invoices.
2. Head Office Invoices.
3. Accounts Payable Department.
4. Purchase Costs.
5. The Relation.

1. Branch House Invoices

In this system the recording and vouchering of the Accounts Payable for the Branch Houses and Head Office is centralized. The Branch Houses receive invoices from suppliers, imprint approval stamps thereon, check and approve original invoice for calculations, correct, associate the invoice against the purchase order, noting the date of invoice

and price thereon, approve the original invoice for "price correct," note the accounting classification and purchase terms on the original and duplicate invoice, and forward the duplicate invoices to the Accounts Payable Department at Head Office where they are filed with the Head Office duplicate invoices. When the Branch House original invoices are approved for receipt of material, or billing to customer, they are manifested and forwarded to the Accounts Payable Department where they are associated with the duplicate invoices which are then destroyed. The original invoices are then filed with the Head Office original invoices awaiting payment, or are associated with the vouchers when Advance Payment has been made. (This phase will be explained in detail further on.)

2. Head Office Invoices

There are three main types of orders on suppliers—shipments to the Company for stock, direct shipments from the supplier to customers, and re-shipments wherein the material is shipped to the Company and later re-shipped to the customer. As the principal buying departments have routines adapted to their own requirements for each type of order, this paper, for simplicity, refers only to invoices applying on General Manufacturing Department stock orders. The actual vouchering, however, is the same for invoices on all orders. On receipt of suppliers' invoices the General Purchasing Department performs the operations already outlined in the Branch House Section, forwarding the original and duplicate invoices to the Filing Section of the Accounts Payable Department and the cost copy, in the case of foreign shipment, to the Customs Department.

3. Accounts Payable Department

On receipt of the original and duplicate invoices, the duplicates are filed alphabetically by payment terms in the duplicate invoice section of the invoice cabinet, and the original invoices are turned over to the Receipt of Material Section for association with the receiving entry and approval. When approved, the original invoice, with receiving entry permanently attached, is returned to the Filing Section, associated with the duplicate invoice and filed in the original invoice section of the invoice cabinet. Foreign duplicate invoices are destroyed; domestic duplicate invoices are forwarded to the General Purchasing Department with the cost noted thereon.

There are four standard payment dates during the month, the 10th, 15th, 20th and 25th, termed as follows:

Class A—10th: Discount and net invoices 16th to end of previous month.

" A—25th: Discount and net invoices 1st to 15th of current month.

" B—15th: Discount and net invoices of previous month.

" C—20th: Net invoices of previous month for which no special terms have been arranged.

" S—Strictly special payments throughout the month.

About four days prior to a payment due date the duplicate invoices that are still incomplete, and the completed original invoices, are withdrawn from the payment file and collated by suppliers in account classification order. The duplicate invoices are included in the payment because they are due and must be paid to obtain the discount, and they are classified to the Advance Payment Account, suffixed by the proper classification. Payment is not made from the duplicate invoice in the case of Class "C" payment as this is a strictly net payment, and payment is withheld until completion of the invoice.

The invoices, attached to a collating slip, are turned over to the comptometer operators who compile the voucher total and summarize the invoice amounts according to account classifications. The classification summary must balance with the total of the voucher. The invoices are then sorted into date order, and with the summary are turned over to the typist who types in numerical order on the voucher Register (Exhibit No. 1), the voucher number, supplier's name, net amount, and amount charged to the Advance Payment Account. The typist then types on the voucher set-up the supplier's name, address, date and amount of invoice, grand total, credits and contra charges, sub-total, discount, net total and voucher number. This set-up consists of—

Combined cheque and voucher detail form.

Voucher form.

Advance Payment Voucher form (Used in the case of Advance Payments only).

Recapitulation form.

Alphabetical file form.

The voucher, recap and alphabetical file copies are identical in make-up; the Advance Payment form is coloured differently to emphasize that the voucher is incomplete; the combined cheque and voucher detail form is, of course, printed on safety paper.

When typed, the voucher is checked for correctness by the comptometer operators, who approve the voucher cheque form. The Voucher Distribution Clerk posts the voucher number and net amount to the record card (Exhibit No. 2), covering the supplier's account, which is filed alphabetically in a cabinet of the visible index type, and approves the voucher cheque form. The voucher auditors audit the vouchers, check the invoices for approvals, discounts, etc., and approve the voucher cheque forms if in order. The approval of the Financial Department is secured as to credit standing on the voucher cheques on Advance Payments.

The vouchers, with alphabetical file copy, are turned over to the Filing Section which files the alphabetical file copy for reference purposes. On completed vouchers the invoices are stapled to the voucher copy and the voucher is placed in the completed voucher file in numerical order. Advance Payment vouchers are filed alphabetically until completed.

The approved voucher cheques are listed twice daily on triplicate recapitulation forms (Exhibit No. 3) in numerical order; two copies with voucher cheques attached are forwarded to the Cashier who receipts and returns one copy which is filed. The recapitulation voucher form is attached to the remaining recap form (Exhibit No. 3) and they are checked to the Voucher Register (Exhibit No. 1) by the Voucher Register Clerk to ascertain that the amounts typed thereon are correct, and twice a week the Voucher Register Clerk prepares a summary of the recaps (Exhibit No. 3) and forwards to the Tabulating Department where cards are punched for the total amount charged to each classification on each voucher. The totals of the summaries are carried forward and at the end of the month must agree with the total Accounts Payable entered on the Voucher Register (Exhibit No. 1), and also with the total figure tabulated by the Tabulating Department.

At the end of the month the Tabulating Department prepares a detailed statement from the punched cards showing the voucher number, the account classification and the amount debited or credited thereto on each voucher, and

..... COMPANY, LTD.

VOUCHER REGISTER

Exhibit No. 1 _____ Month of.....192..... Sheet No.....

Item No.	Voucher Number	Suppliers Name	Account	Cashier's Recap. No.	Account	Date Cleared
1						
2						
3						
etc.						

Exhibit No. 2

Voucher Date	Voucher Number	Amount	Remarks	Voucher Date	Voucher Number	Amount	Remarks

Name Address Terms

..... COMPANY

To General Financial Department

From Accounts Payable Department

Date..... 192....

Exhibit No. 3

CHECKS SENT FOR ENTRY AND SIGNATURE

Voucher Number	Amount	Voucher Number	Amount

Cashier.....

from this statement prepares a summary of the total amount debited or credited to each classification in account order. As already mentioned, the net total (debits less credits) of this summary must agree with the total of the voucher amounts entered on the Voucher Register. In addition, the amount charged to Advance Payments Account on the tabulated summary must agree with the total Advance Payment Account charges typed on the Voucher Register by the typist.

The Bookkeeping Department post from the summary direct to the accounts and credit Accounts Payable Account with the net difference between the debits and credits.

Clearing Advance Payment Account

As the Advance Payment vouchers are completed the vouchers are audited and placed in the completed voucher file. The Advance Payment voucher form is approved and turned over to the Tabulating Department. At the end of the month the Tabulating Department prepares a detailed statement from the punched cards and a summary as previously explained. From this summary the Bookkeeping Department debit the account classifications and credit Advance Payment Account with the total. Advance Payment items incomplete prior to the current month are also tabulated and debited to the account classifications and credited to Advance Payments. This procedure is followed for Merchandise Investment purposes and the journal entry is reversed the following month as the Advance Payment will be properly cleared on completion of the voucher.

Miscellaneous

The balance in Accounts Payable Account is proven as follows:—When the Cashier forwards cheques to suppliers they are recapped, a copy of the recap is forwarded to the Accounts Payable Department and the Voucher Register Clerk posts the recap number in the Voucher Register (Exhibit No. 1) opposite the voucher number. At the end of the month a tape is taken of the open items, the total of which must agree with the total of the cheques held by the Cashier and also the balance of Accounts Payable Account.

Duplicate Payments

The following are a few precautions used to guard against duplicate payments:

On all orders the date of invoice and price is noted on the Purchasing Department copy of order.

Invoices on stock orders must be associated with approved receiving entries.

Invoices on direct orders must be associated with shipping and charge ticket for billing to customer. The date and amount of supplier's invoice is noted on the shipping and charge ticket which is also stamped "Billed" when billing is issued.

Duplicate invoices dated prior to the current month are the object of a special check before payment is made.

Unaudited Journal Entry (Unpaid Invoices)

At the end of the month an unaudited journal entry is prepared of unpaid invoices on hand. This journal entry is reversed the 1st of the following month as the accounts will be charged when the invoices are paid through the Accounts Payable journal entry. The details of the unaudited journal entry also provide figures for estimating payments for the following month.

Estimated Payments Report

A report is prepared on the 10th of the current month estimating the payments for the month. The report is divided into three periods, 1st-10th, 11th-20th, 21st to end of month. The figures for the first period are actual, compiled from the payments made in that period. The figures for the second period are taken from the unaudited covering invoices on hand due in that period, plus a percentage to allow for invoices not received. The third period is based on the 1st period as far as the main payment is concerned, and on figures from the unaudited covering other payments due in that period, plus a percentage for invoices not received. This report also includes estimates for payroll, freight, duty, taxes, etc.

Inventory

In the month in which the Annual Inventory is taken the Accounts Payable Department includes in that month's vouchering all invoices received covering prior or current liabilities.

An unaudited inventory is taken at the close of vouchering, prepared on inventory sheets, of any unpaid invoices and expenses or services for which invoices have not been received. This inventory is debited to the various merchandise or expense accounts. The journal entry is reversed the 1st of the following month.

After the Accounts Payable and Unaudited Journal Entries have been posted the balance in the Advance Payment Account is cleared and charged to the merchandise accounts and an actual Goods in Transit inventory is taken, prepared on inventory sheets, of all advance payments for which material has not been received or billing rendered to customer. This inventory is charged to Advance Payment Account and credited to the merchandise accounts. Both of these journal entries are reversed the first of the following month.

4. Purchase Costs

In the case of domestic suppliers, transportation and other charges, when applicable, are added to the invoice cost on the supplier's duplicate invoice which is forwarded to the Purchasing Department. In the case of foreign suppliers, duty, transportation and other charges, when applicable, are added to the invoice cost on the cost copy of the supplier's invoice which is forwarded to the Purchasing Department. This department extends the cost to a unit basis, records the unit cost on the purchase order and forwards the unit cost on a cost slip to the departments ordering the material for costing purposes.

5. The Relation

Accounts Payable and Correct Cost results are related only when the employees of the department perform their work in an intelligent manner. It is so easy to work mechanically, to regard, from constant association with large amounts, a $1,000.00 invoice in the same light as a $10.00 invoice, to make errors of omission, etc. In this regard it is the duty of every supervisor to instil a "pride of work" feeling in the minds of those reporting to him; to see that they know every phase of the work and to keep them interested in the work of the department.

Question

"What verification have you that all material received into stock and included in your inventory at the end of that period has been properly set up in your Accounts Payable liability as of that date?"

Answer

When orders are placed on suppliers, stock record and receiving entry forms which are part of the order set-up,

are forwarded to the Receiving Room. When the material is received the stock record forms go with the material to the Stockroom where one copy is retained and the other initialled and forwarded to the department ordering material for posting to stock cards. The receiving entry is forwarded to the Accounts Payable Department where it is associated with the original invoice which is vouchered and included in the Accounts Payable journal entry. Receiving entries for which no suppliers' invoices have been received are costed and listed in the unaudited inventory and included in the unaudited journal entry.

NEW BOOKS

How to Read a Profit and Loss Statement. By Herbert G. Stockwell, Certified Public Accountant (Pa. & N.Y.); member of the firm of Stockwell, Wilson and Linvill; member of the Philadelphia Bar; author of "How to Read a Financial Statement." Published by The Ronald Press Company, 15 East 26th Street, New York. 411 pages, $4.50.

This is a companion book to the previous one by the same author entitled "How to Read a Financial Statement." The arrangement of the two books corresponds, so far as the author found practicable. The new book covers its subject exhaustively, and is illustrated with forty-one sample statements. It is of value to the accountant, the investor and the executive. Chapters on "Cost of Sales," and "Cost Essentials in Profit and Loss Accounts" will appeal especially to the cost accountant. Both Mr. Stockwell and the Ronald Press are to be congratulated on this excellent work.

COST ACCOUNTING RECOGNIZED

COST Accounting is becoming known outside of its own particular field. The Investment Bankers' Association of America recently referred to a good cost system as an essential of a sound manufacturing enterprise. A Canadian appraisal company mentions the services of cost experts in connection with a proper valuation. Such recognition by outside organizations is proof that costing has established itself, and it also helps to widen still further the field of usefulness.

Time and Motion Study

By CARL B. PROSSER

Consulting Cost Accountant

(Before Toronto Chapter, January 11, 1928.)

IN time and motion study I have been allotted a subject which is of vital importance to all manufacturers and should be a matter of grave concern to them. Personally I consider it the most important factor in the economical functioning of any industry. How many realize it?

This subject covers such a wide field of study that one might discuss indefinitely various features connected therewith that have come to his personal observation or knowledge and still not touch upon certain experiences, problems or studies with which you have been respectively identified. It seems to me, therefore, that it might be more beneficial in a general way if we were to have an open discussion on the subject and for you to bring up situations in which you are or have been interested. By this means you will have the benefit of the knowledge of much greater talent than myself that I see before me. This will also, by the way, give me the opportunity of abbreviating my remarks for which, as I proceed, I do not doubt for a moment that you will be profoundly grateful, but I shall also, and we will, therefore, split 50-50.

Time and motion study may readily be discussed separately as Time Studies and Motion Studies. They are in one sense separate, as wasted time does not by any means always involve waste motion, and in another sense they are indispensably linked together in that waste or unnecessary motion is waste time and a saving of this motion a saving of time and money.

What is the object of a Time and Motion Study? It is, of course, to make an intensive study of various operations, to detect any unnecessary time spent in connection therewith that can be eliminated, to instruct the operator as may be required, to study each and every movement connected with the operation with a view of shortening or eliminating it, and after repeated trials, when the investigator has thoroughly satisfied himself that no further short cut can possibly be effected, definite time limits are established for

these operations in future, and they may be placed on a piece work, premium or bonus basis. Mind you, there must be no mistake made here or it will be obviously disastrous, either in allowing too much time limit to the detriment of the business, or too low a limit reacting to the discouragement of the operator. Every possible precaution must, therefore, be taken to definitely ascertain the least time in which it is possible to perform given operations, after all superfluous motions have been discontinued. I lay great stress on this advisedly.

To be very successful in Time and Motion Studies, one must of necessity have a good knowledge of mechanical engineering. He should in fact be a graduate mechanical engineer. Technical matters are constantly arising in which this knowledge is indispensable. For instance, say an operator is turning down a piece of steel on a lathe. We should be able to determine if he is taking a sufficiently deep enough cut to enable the operation to be completed as quickly as possible with due regard for safety. Some of us may have felt the handicap of lack of this knowledge, but if we have always been keenly interested in the work in the shops we naturally must have become familiar with standard operations. I know some prominent successful investigators in Canada and the U.S. and they are graduate engineers—each requiring high remuneration, but their services are always in demand. This does not, however, prevent we amateurs from accomplishing much good in this direction. We can be successful only by training our powers of observation. When going through the shop, stop and study various operations. Ask yourself what lost time can be eliminated here, and after careful study, nine times out of ten, and often the full ten times, you will see some short cut in the work. For instance, in a large steel plant in which I was engaged a short time ago—not on Time and Motion Study, but on other work, while walking through the shops my attention was forcibly drawn to a man at a machine shearing small steel bars, etc., where several could very well have been handled in place of one at a time.

It required no ability to detect this waste time, it was merely trained observation. Again, in a large plant in the manufacture of steam fittings, observation showed that by a simple change in the method of facing the seat of a large valve the operation which formerly took half an hour was reduced to 18 minutes.

It is surprising how the studious use of our powers of observation, interest and concentration will enable us in a short time to make it almost impossible to go through a plant without remedies for certain lost motion suggesting themselves. A man may be unloading or passing coal, say. He is working diligently but not accomplishing much. We note that he is not handling the shovel properly or is not digging into the coal efficiently. If he is not doing this work properly he is over-exerting himself and not accomplishing what is possible. Again, in any work of this nature the workman may be using the wrong type of shovel, and a little study, and possibly experiments, in the various types of shovels for various purposes will be found advantageous.

A trained expert investigator can go to an operator on a machine, explain to him how the work can be done more rapidly, and asking the operator to stand back and watch him, is able to take the machine and himself perform the work in the desired manner.

All operations on each piece are charted after careful study and experiments. If one plant can perform the various operations in certain definite charted time limits, other plants along similar lines can achieve similar results with similar equipment. If the equipment should be improved it is of course the duty of the investigator to suggest such improvements to the management. I am told that the works of the Ford Motor Co. are one of the best examples of the beneficial results of charting each individual operation. If an operator is unable to perform his work in the allotted time, he must make room for a quicker man. This is absolutely essential because he will hold up the next and following operations down the line, and the results of one man's slowness will be far reaching and very injurious.

We may notice when going through the shops that considerable time is spent in placing heavy castings into position on respective machines and find that an overhead runway with a chain block will save a vast amount of time. I have personally seen large sums of money saved through efficient overhead runways with hoists and equipment, and also the carrier systems, whether endless belts or steel roll conveyors, constantly taking materials from one operation to another. I would, therefore, strongly urge upon you the study of your plants in this regard as I am convinced that the majority of plants can be materially improved by the introduction or extension of this plan.

A great fault in many plants has been found to be in the necessity of moving materials too far from one operation to the succeeding, and in such cases a re-arrangement of the machines will be found to result in considerable economy. We must always bear in mind that the work must be carried through the respective operations from start to finish without the slightest unnecessary delay.

The lay-out of the shops will have much to do with economical operation. A properly constructed plant is on one floor, with possibly mezzanine floors, to and from which work could be quickly elevated or lowered by cranes. This, of course, saves a great deal of lost time and money in the use of elevators. I am prepared to admit that on account of the location in many of our cities the cost of land may prohibit this plan, necessitating the erection of the building upwards various floors, but this is nevertheless, in the majority of cases, a misfortune and source of loss to such manufacturer.

Buying human service, whether of labourer, skilled worker or men in any capacity, is the hardest problem the manufacturer has to face. Men prefer to sell their time rather than their labour and to perform in that time whatever quantity and quality of work they consider proper. The great error in buying labour is to attempt to standardize the method of payment without adequately studying and standardizing the operation.

Any scheme of management must be beneficial alike to employer and employee or it will fail. A workman will not willingly follow instructions unless he is convinced that obedience will be to his advantage. We cannot force him to do it, and usually in the beginning he is quite hard to convince. Once we have convinced him to try his best and have trained him to accomplish his operation as desired, we must keep absolute faith with him. We must strictly maintain the standards of equipment and service by which he is enabled to perform the prescribed work. Having set a task, we must not increase it unless at the same time we improve the method of doing it. We have seen many good and promising attempts made to standardize operations and rate them, result in disastrous failures because the investigators were evidently considering the situation from the viewpoint of the advantage to the manufacturer only with an apparent utter disregard for the benefit of the workman. We must take the workman into consideration in the division of

profits, and he is entitled to it. The manufacturer cannot hope to increase profits through reduction of costs unless operators who are responsible for this achievement also benefit to some extent. It is the psychology of human nature and cannot be altered. If when setting time limits we have made a mistake in favour of the workman we must abide by the error until an opportunity offers to improve the method of performance or otherwise adjust it satisfactorily.

Stop watch studies of various operations will bring serious time losses to the light immediately. Say, with our stop watch and revolution counter we determine the number of revolutions per minute of a piece of steel being machined. We should be aware from engineering knowledge the approximate rate of speed with which the work should be done. We will probably find that the number of revolutions are not what is possible and will instruct the operator to speed up the machine. He will, no doubt, protest, for the human element is always at work, but we insist and the work proceeds much more rapidly.

Take another simple case; one of folding cloth in a certain plant. The investigator soon saw that few of the girls observed the same sequence of motions all the time, but all took two steps to the right to secure their cloth, returned to their tables, folded the cloth and deposited it on another pile two steps to the left. That had always been the practice; no one had ever thought to question it, but the investigator saw the waste motion connected with it the first day. After many experiments with several folders he re-arranged the tables so as to cut out 4 of the 8 steps each piece had cost. Next he analyzed and timed the detail motions in folding, determined the swiftest and easiest way to perform each, and made the sum of these the standard method of folding. With the same force and equipment that department is delivering twice its former output and congestion has disappeared.

Wasted Steps Are a Great Source of Lost Time

Opposition will invariably be encountered from superintendent and foremen. We have no doubt all experienced it. They resent any innovation, possibly because they had not thought of it themselves or possibly because they are convinced that the old methods are the best. This opposition may, of course, be readily overcome by laying the

matter before the management, who are behind us in our endeavours. I have personally, however, found it a much better plan to cultivate the good will of these men, to convince them, according to their respective personal characteristics, of the necessity of the undertaking and the advantage to all concerned if brought to a successful conclusion. We will by this means shortly have their co-operation, which is so essential in work of this nature.

We cannot confine Time and Motion Studies to factories. In a certain office employing 140 clerks an investigation was undertaken to determine the best way of performing the ordinary function of the office. Stop watch studies of the entry clerks showed that a reasonably continuous performance of their duties would cut 2 hours a day from the time consumed. These 2 hours were taken up in conversation, in reading newspapers, and in many unnecessary movements. It was further revealed that varying methods of handling their work caused loss of many minutes. Experiments were made, better methods of handling and filing the work established, all details analyzed and the best way determined for each.

Stop watch study of stenographers showed similar loss of time. Repeat operations were tested to determine the normal maximum number of lines to be written in a time unit of 6 minutes. Most of the operators accomplished 40% additional work when placed under instructions and freed from hindrances. Much of the lost time had been due to conversations, visiting, bad arrangement of machines and light, and poor equipment. Many of the operators were not sitting at the proper height for their machines. These defects were adjusted, desks were arranged in a better manner, which reduced steps, improved types of typewriter chairs installed, and the machines in use were standardized. Throughout this investigation the health of the clerks was considered. The possibility of physical or nervous strain was rigidly eliminated and a normal requirement was adopted throughout with due regard for periods of rest. Yet after a period of investigation and re-organization, 85 clerks and stenographers did the work formerly done by 140, simply by doing each operation in the best way.

Permit me to say that when undertaking a Time and Motion study it is next to impossible to advise the prospective client of the probable length of time such investigation must consume and it would be unwise to hazard a guess.

This work requires intensive study and possibly many experiments before a satisfactory basis is determined. During the progress of this study the investigator will probably be the hardest working man in the organization and the man carrying the greatest mental strain. This work essentially demands doing it well or not at all. The investigation may occupy months, a year or over, but when completed the profits derived from the study will amply repay the expense incurred. I would advise, therefore, that if your clients insist upon some information of the relative time required for the investigation you endeavour to show them logically just why this simply cannot be done with any degree of accuracy.

Need I continue? etc.

A COSTLY ERROR IN COSTS

In his address to Toronto Chapter last November, John E. Goldring, comptroller of the Robert Simpson Co., Ltd., Toronto, recited the following instance showing the need for knowing your costs before going after volume.

"While at lunch a few days ago with an officer of one of the large concerns in the United States, the conversation turned to manufacturing. 'It is surprising,' said he, 'the number of manufacturers that are running along from year to year making money on some lines of their product and losing money on others, and as the natural tendency is toward a greater increase in the non-profitable business, these manufacturers do not awaken to this situation until it is too late.'

"He recited the following story. A certain manufacturer made an arrangement whereby he would supply a particular line of his product and specified prices according to quantities ordered. The merchant prepared his sales campaign, spent considerable money in an extensive advertising programme extending over the whole country. The sales were much greater than anticipated. The manufacturer in turn was given so much business that it really put him out of business. The merchant had accepted these orders and was forced to go out and pay much higher prices, overtime being necessary to have quick deliveries. The results were that both the manufacturer and the merchant lost considerable money. This is not the whole story. The widely advertised price of this commodity affected the trade of other manu-

facturers and merchants selling this line, and the total damage to the trade generally was therefore fairly widespread."

"I wonder if they had a cost accountant, if so he either had sleeping sickness, or had not been consulted."

In concluding his address, Mr. Goldring described in some detail how a big concern was rescued from difficulty by the joint aid of its bankers, and outside engineers, resulting in new management and careful budgeting. This was covered in our report of Mr. Goldring's address in our January issue. "This remarkably successful solution of a most difficult industrial problem," concluded Mr. Goldring, "was due:—

1. To the management which recognized the difficulty of the situation and sought advice and acted upon it.
2. To the engineers who made so exhaustive a study of the conditions surrounding this particular industry and who analyzed the various assets of the company so intelligently.
3. To the budget which developed the possibility of a definite income from a reasonable sales anticipation and which provided a method for protecting the expected earnings by a copper riveted system of control.
4. To the new chief executive who possessed the ability and the courage to make both the plan of operating reorganization and the budgetary control system function.

POSITIONS AVAILABLE

Number 104—Cost accountant wanted for pulp and paper company in northern Ontario town. Should be young man with some years' experience in senior cost work. Will be under direction of company's general accountant.

The Cost of Fire Insurance

By W. A. THOMPSON

Manager for Canada, Norwich Union Fire Insurance Society

(From an address before the Insurance Institute of Toronto, February 16, 1928.)

INSURANCE rates charged the public must take into account the necessity for providing in themselves a margin of profit and the fact that the business at the moment can, as it happens, bring the interest on its accumulated funds into the matter, if an underwriting loss has been made, does not alter the fundamental fact that the soundness or otherwise of the business can only be measured by whether or not the rates fixed in themselves can satisfy the "worth while" of labour and the "worth while" of capital and provide a satisfactory margin of economic rent.

There is another point to which I would like to make brief reference before I conclude and that is the question whether the cost of our business can be economically justified or not. Now, insurance is, I think, the only business which voluntarily gives to the public details of its costing system, with the result that many of the public and also some who should know better say that forty odd cents spent in operating costs out of every dollar paid by them in premiums is much too high a figure. If, however, the public could be put in possession of the costing details of each dollar they spend when purchasing a manufactured article they would probably be somewhat surprised to find that a considerably higher proportion of their dollar than forty cents represented operation costs, and if the middlemen's and retailer's profit was added to these operation costs (as insurance does in its forty odd cents expense ratio) the result would be more surprising still. In fact they would invariably find that the inherent value of the manufactured article represented not a great many cents out of their dollar, and in view of the searchlight of publicity which the Government directs on insurance by collecting and publishing the full costing details of the business, it might be as much in the public interests if they compiled and tabulated the ratio which the actual cost of all articles bears to the prices which the public have to pay for them. If such a

thing could be done I am certain that the inherent value of very few articles would be found to be anything like that of insurance where it is normally around fifty cents in the dollar. However, as things are the Government does not say to the manufacturer that he should reduce his costs and his profits or that the middlemen and retailer get too big a share of profit out of the article, since they realize that under the economic laws of supply and demand prices will regulate themselves and that the price charged must be adequate to meet all economic laws. This is equally true of and should be recognized in the insurance business.

Another economic factor not to be lost sight of in the matter of the forty odd cents expense ratio is that it is spread over a large body of workers in the business, each of whom is an economic unit in the State. You cannot get away from the truth that the labourer is worthy of his hire —the "worth while" of labour must be satisfied in insurance as in any other business. All business is interknit and the prosperity of each and of the State is best achieved by the prosperity of all. Huge fortunes are not earned by workers in the insurance business to anything like the same extent as they can be and are in many other branches of trade and commerce. Insurance companies do not pay 100 per cent. bonuses on salaries as some other financial interests are seemingly able to do out of their earnings. Our insurance business is not in any way extravagantly conducted considering its many ramifications and the extent to which it enters into each and every activity of life. Its value can only be measured by the quality of the service it renders. It is something more than a commercial undertaking, and the interests of the policy-holders and of the companies or the agents are not antagonistic nor conflicting as is too often implied by unthinking people. This is an important characteristic of insurance that never should be lost sight of, and the more it is understood the greater will be the possibilities of real success rewarding our labours, a success not measured by material standards alone but by ethical standards also. The growth and development of the insurance business has been and must continue to be concurrent with the growth and expansion of the economic interest of the State, and it can fulfil its purpose without any government or bureaucratic control if it only makes its service full, adequate and spontaneous.

Developments in Engineering Education

By J. A. COOTE

Assistant Professor of Mechanical Engineering, McGill University

(Reprinted from the McGill News)

ONE of the disturbing factors in engineering and educational circles during the last six years has been the surplus of engineers. The over supply became evident in the post-war slump, but it would have appeared earlier had the war not intervened. During the last two or three years the fact of the over supply has been emphasized and young men have been deterred from entering the engineering profession. Just at present there is a shortage, probably due to the decrease in the numbers entering, but the shortage will soon be turned into a surplus if the universities begin turning out engineers again at pre-war rates.

While our natural resources were being developed and public works were being built at a constantly increasing rate, great numbers of engineers could be absorbed, but when such work dwindled to almost nothing old engineers found themselves out of employment and new ones could find few, if any, openings. After a period of depression, Canada seems to be entering on a period of prosperity, but even a large measure of prosperity will not bring back such a period of development as was witnessed in the decade before the war.

There are two ways of dealing with the situation, by reducing the number of men training for the engineering profession or by opening new avenues of usefulness to them upon graduation. It is doubtful if anyone would say that we have too many men with engineering training in Canada at the present time. On the contrary, we have many clear-thinking men who are of the opinion that what we need is greater and wider application of scientific methods in all lines of industry. Our engineering graduates with the training that they get along scientific lines should be the ones to make this contribution to industry. The question then becomes "how can our engineers best be fitted for this task?"

During the war, and since, quite a large number of engineers found their way into industry, and now they occupy executive positions where their talents and contribution are appreciated. Many of them found themselves handicapped by their lack of knowledge of business and of business methods, and of those problems that arise where the efforts of large numbers of workers have to be co-ordinated; and while some of them by private study have become proficient in these fields, others have found themselves permanently handicapped by this lack.

It would appear, therefore, that there is a place in industry for the engineer with a knowledge of accounting and business methods, of economics and of human relations. The curriculum in most courses given in the engineering schools is overcrowded, so that subjects cannot be added to the existing courses unless something is taken away. But a close scrutiny of existing courses would indicate that there are some things that could be left out in order to make room for the new subjects, and that the graduate going into industry would be better for the substitution.

A start has been made at McGill University in the Mechanical Engineering Department. For some years a course called Works Organization and Accounting, consisting of one lecture per week throughout the year, was given in the fourth year. It was realized that even if the whole time in this course were available it would be impossible to give students any training in accounting worthy of the name. Accordingly, in 1922, the course was divided and Accounting was given in the third year as an alternative to Mechanics of Machines; the time allotted being one lecture and one problem period of two hours (later increased to three hours) per week throughout the year. This gave more time for the other part of the course which was revised, and the name was changed to Industrial Engineering.

In the next year changes were made in the first and second year courses in Shop Methods and the work formerly given in the third year was put forward. This enabled the course in Industrial Engineering to be advanced to the third year, and thus the number of lectures given in the fourth year were reduced. A new course, entitled Industrial Administration, consisting of two lectures and a problem period of three hours per week throughout the year, was put on in the fourth year and made alternative to Thermo-

dynamics. This course included organization, plant design and layout, lighting and ventilation, factory power, standardization, job study, wage payment, personnel relations and production control. In order to get time for the problem work, the student taking this course spent three hours per week less in the mechanical laboratory.

In 1925 a rearrangement of courses was made, and in place of the course in Industrial Administration a new course, entitled Industrial Engineering IV., was inaugurated. This course starts with a survey of the market for a commodity; the design and location of a plant for its manufacture, including arrangement of equipment, ventilation, lighting, etc.; probable operating results for various production ratios; building the organization; financing and floating the company. (This includes a short course formerly given as Plant Design.) Two short courses are also given alternative with Mechanics of Machines in the fourth year. In the first term a course of two lectures per week is given on Industrial Relations. In the second term a course, called Industrial Administration, is given, which consists of a lecture and a problem period per week. This course is chiefly concerned with the mechanics of administration: how to build up the organization; methods of control; charts, etc.

All students in Engineering take courses in Economics in the third and fourth years, so that students taking the options in Industrial Engineering get the following:

Industrial Engineering III.	24 hours	Third Year
Accounting	96 hours	
Economics	24 hours	
Industrial Engineering IV.	120 hours	Fourth Year
Industrial Relations	24 hours	
Industrial Administration	48 hours	
Economics	24 hours	

To sum up, students in the third year get a general course covering the general field of Industrial Engineering and a similar course in Economics, while those who exercise their option get a knowledge of the fundamentals of bookkeeping and accounting so that they should be in a position to analyze a financial statement or read a set of books intelligently. In the fourth year all students get a further course in economic problems, while those who exercise their options get a comprehensive course covering the design side

of Industrial Engineering with supplementary courses covering the problems to be met with in administering an industrial enterprise.

There is no implication that this training is ideal, but testimony has been received from graduates as to the value of the courses given, and comparison with those given in other universities would indicate that they are at least of equal value. The number of men taking them at present is small, due to very small enrollment in the senior years, but with larger numbers in the junior years it is expected that in the near future there will be considerable increase. It then remains for the graduates from these courses to show what contribution they have to make in the field of industry.

The hope is entertained that as numbers increase these courses can be strengthened and supplemented by others which are not only profitable but necessary, if our graduates are to be fully equipped to meet the demands made upon our future leaders. A working knowledge of psychology is almost imperative for one who has to handle men, but at present there is no opportunity for students to acquire it in the regular course. Another very important subject is industrial hygiene, and all students would be the better for a more thorough grounding in economics and accounting.

The great problem, as indicated in the beginning, is how to make room for these extra subjects. The proper way would be to take more time, which means adding a year or two years to the course. By the time this branch becomes important enough to be made a separate course, perhaps its possibilities will be realized sufficiently to lead men to give an extra year or two in order to qualify themselves for important positions.

The extra time could be utilized in two ways. By taking the double course in Arts and Applied Science students would get the benefit of modern language study and a more thorough grounding in English, economics and history. They would also be able to take, at least, a general course in psychology. They would then be able to devote the time given to economics in the Applied Science course to industrial medicine and hygiene.

The other way would be to take the regular course in Applied Science and then to spend one or two years in graduate study. The experience gained in actual practice during vacations would enable the student to make an in-

telligent choice of the field and to concentrate on some line of work that he has found to his liking.

Which of the two methods would give the best results would depend somewhat on the temperament and the background of the student. It would probably be found that each of them had some specific advantages for different parts of the field, so that the graduate with the Arts training would find his way into those branches of the work having to do with the humanities chiefly, while the man with the engineering training would naturally find his place at the engineering end of industry.

BUDGET EQUALIZED PRODUCTION

"HIS Figures Made Goodrich Hum," is the title of an article from the pen of Fred Barton of Akron, and published in the January 15th issue of "Forbes." The article is based upon the administration of Harry Hough as comptroller of the B. F. Goodrich Co. and of his election as president of the company.

"Blizzards step up rubber boot sales and summer speeds the tires but the budget levels the output," writes Barton in telling how Mr. Hough established and maintained a very effective budget system at the Goodrich plant, whereby every department operated under a specific budget.

Barton describes how Mr. Hough established the Goodrich budgetary system and editorializes on the advantages of such scientific management of the company. He tells how the budget system has equalized production curves on various Goodrich products and has effected economies in production and sales. He speaks of Mr. Hough as representative of the "new order" of executives in big business to-day, and says: "The traditional factory man who knew all the customers by name, who knew every bolt and nut and workman in the plant, and who could possibly do half the intricate processes in the shop, has passed out of the picture."

The article describes in detail how Mr. Hough worked out his budgetary system, and refers particularly to Mr. Hough's judgment on matters of rubber purchases and of the favorable position Goodrich has been occupying in this respect.—India Rubber and Tire Review.

CHAPTER NOTES

TORONTO

Toronto Chapter meeting on February 8th was addressed by W. A. McCaffrey, Cost Accountant of the Office Specialty Manufacturing Co., Ltd., of Newmarket, on "Cost of Distribution and Its Control." Mr. McCaffrey is a frequent attendant at the meetings of the Chapter, and therefore was already well known to the members. The business of his company, involving national distribution of varied but allied lines, furnished good illustrations for his subject, and his address was followed with the closest interest. It is available for printing in Cost and Management.

The annual meeting of Toronto Chapter was held in the Board of Trade Rooms on February 22. James Turner, C.A., Retiring President, occupied the Chair.

The following Executive was unanimously elected for the coming year:—

Chairman, J. E. Carruthers, Durant Motors of Canada, Ltd.; Vice-Chairman, D. C. Patton, Sangamo Electric Co., Ltd.; Secretary, J. R. Pidduck, Neptune Meter Co., Ltd.; Treasurer, H. A. Shiach, C.A., Rutherford Williamson & Co.; J. A. Dunlop, Gutta Percha & Rubber, Limited; C. S. Eddis, F.C.A., W. C. Eddis & Sons H. E. Guilfoyle, C.A., Clarkson, Gordon, Dilworth, Guilfoyle & Nash; Fred Page Higgins, F.C.A., Fred Page Higgins & Co.; K. A. Mapp, C.A., Henry Barber, Mapp & Mapp; R. Oaten, Gurney Foundry Co., Limited; E. T. Pointon, C.A., Edwards, Morgan & Company; W. G. Pierdon, Hydro-Electric Power Commission of Ontario; A. M. Rae Massey-Harris Co., Limited; J. W. Spence, Canadian Kodak Co., Limited; James Turner, C.A., The T. Eaton Co., Limited. Nomination for Toronto Representation on the Dominion Executive of the Society resulted as follows: C. H. Black, Dunlop Tire & Rubber Goods, Ltd.; J. E. Carruthers, Durant Motors of Canada, Ltd.; H. E. Guilfoyle, C.A., Clarkson, Gordon & Dilworth; G. H. Houston, Rolph-Clark-Stone, Limited; H. T. Jamieson, H. T. Jamieson & Company; T. S. Jardine, United Drug Co., Limited; D. C. Patton, Sangamo Electric Co., Limited; A. B. Shepard Thorne Mulholland, Howson & McPherson.

Following the annual meeting, the regular session was held, and the address by T. S. Jardine, of the United Drug Co., Ltd., proved to be one of the most thorough and practical in the records of the Chapter. Mr. Jardine described in detail the cost system used by his company, and its rela-

tion to the problems of the business. A comprehensive chart illustrating the flow of materials through the factory he referred to as the "bible" of his department. Other forms in use were also shown to the members. The discussion which followed was brief but keen. Some members claimed that the speaker's plan was merely job costs set alongside a standard cost system, but Mr. Jardine held that it was only in the case of decided variations, or new lines, that they had to fall back on job costs.

The annual dinner of Toronto Chapter will be held on March 21, in place of the regular meeting scheduled for that date. The speaker of the evening will be C. L. Burton, general manager of the Robert Simpson Company, Ltd., and president of the Toronto Board of Trade.

MONTREAL

One usually associates the professoriat with the expounding of theory—lofty ideal theory, above and beyond the ken of the ordinary mortal. Professor J. A. Coote, B.Sc., of McGill University, rather dispelled that idea when he spoke on "Factory Organization" at our meeting of February 10th, for the most practical man found very much that he could directly apply. Speaking of the organization end of business enterprise, Professor Coote stated that while the form of the organization is determined by the functions involved, the general structure must follow one of two types or some combination of them—

(a) The line or military form,

(b) The functional form.

The larger numbers are combinations with the functional divisions at the top, determined after careful analysis of the particular business. When the form has been determined, charts may be made, which if drawn up with consistency and care, are of valuable assistance.

Perhaps the greatest difficulty may be encountered in the selection of the proper personnel and the building of the position to fit the men available. Conditions must be the best possible for "The spirit animating the personnel is much more important than the form of organization."

Slides were shown illustrating various military and functional types, emphasizing the advantages and disadvantages encountered in each.

At our meeting of February 23rd, the usual staid and proper atmosphere was highly charged with political energy. All the essentials were present—a handful of the fighting brand of politicians; closely contested elections; motions, amendments and sub-amendments, and the usual electoral accusations. The hitherto worthy and respected Chairman, the Secretary and even the guest of the evening, were charged with misconduct—manipulation, corruption. However, our political aspirants were unique in one respect, in that instead of trying to break through to gain their own election, each was striving to efface himself for the benefit of his competitor—not through fear of responsibility, but through genuine regard for the ability of the other—truly a most unusual and unprofessional type of politics. But out of the strife comes peace, and the slate selected should be able to show during the coming session that they are worthy representatives of an active and growing membership.

Mr. F. I. Greenfield, of the Steel Company of Canada, who provided the educational item of the evening, spoke on the "Application of Factory Overhead in the Steel Industry." His paper was most practical and instructive, and should appear in "Cost and Management" in the near future, to give opportunity for the close study it requires.

HAMILTON

Two meetings of exceptional interest were held during the month of February. The Norton Company of Canada, Limited, exhibited to the members a film entitled "The Age of Speed," which showed that modern developments of speed and power are dependent upon the accuracy with which machinery to-day is constructed. Under present-day conditions the term "a hair's breadth," is no longer a measure of closeness, accuracy of production having divided the hair's breadth into many parts. In addition to showing the application of precision grinding in many industries, the film gave a very complete display of the manufacture of grinding wheels and tools, and was equivalent to a plant visit to the works of the Norton Company. After the pictures had been shown many phases of the industry were discussed and illustrated by Mr. P. N. Cooke, who was responsible for an extremely enjoyable and profitable evening. The film is available for display and is strongly recommended to the attention of our Toronto and Montreal friends.

On February 22nd a plant visit was made to the works

of the International Harvester Company of Canada, Limited, about twenty-five members spending a profitable, if somewhat tiring, afternoon. There is no doubt that visits of this kind are an education to the average cost man who gets little opportunity to see the inside workings of factories other than his own. The size of the industry, the many lines of manufacture which it embraces, astonished our members, who were able to see only a portion of the plant even during a long afternoon. At the evening meeting a very hearty vote of thanks was extendd to the officials of the Company for their courtesy.

The annual meeting of the Chapter was held on the evening of Wednesday, February 22nd, when election of officers took place. The members discussed many phases of the Society's activities and offered much constructive criticism for the consideration of the new executive. Subsequently the subject of Manufacturing Accounts was introduced by Mr. Finck and discussed by the members generally.

The following officers were elected for the coming year: Chairman, S. E. LeBrocq, The Steel Company of Canada, Ltd.; Vice-Chairman, G. E. F. Smith, C.A., Richardson Smith, Ferrie & Co.; Secretary-Treasurer, M. I. Long, C.A., Clarke, Houston & Co.; A. J. Finck, Moto-Meter Company of Canada, Ltd.; A. E. Keen, C.A., Thorne, Mulholland, Howson & McPherson; R. E. Love, The Hoover Company, Ltd.; A. J. Mouncey, The Norton Company of Canada, Ltd., and H. R. Tallman, Canadian Canners, Ltd.

Representatives to the Dominion Board, in addition to the Chairman and Vice-Chairman, are Messrs. Love and Long.

The Canadian Society of Cost Accountants

MEMBERSHIP, MARCH 1, 1928

SENIOR MEMBERS

TORONTO CHAPTER

Baker, H. C., Jr., Canadian Appraisal Co., Toronto.
Bassin, Noel M., Room 219, 319 Bay Street, Toronto.
Bennett, E. J., F.C.A., 1532 Bank of Hamilton Bldg., Toronto.
Black, C. H., 37 Thorncliffe Ave., Toronto.
Burdett, R. A., 108 Mutual St., Toronto.
Burns, A., N., Smith Mfg. Co., Ltd., Toronto.
Carruthers, J. E., Durant Motors of Can., Ltd., Leaside.
Clark, Arthur, 47 King St. W., Toronto.
Clarke, John, C.A., 1009-1011 C.P.R. Bldg., Toronto.
Dalglish, T. G., C.A., Huronian Belt Co., Ltd., Toronto.
Dilworth, R. J., F.C.A., 15 Wellington St. W., Toronto.
Donaldson, W. G., A. T. Reid Co., Ltd., Toronto.
Dunlop, J. A., 80 Constance St., Toronto.
Eddis, C. S., F.C.A., W. C. Eddis & Sons, Toronto.
Edwards, H. P., F.C.A., 10 Adelaide St. E., Toronto.
Eells, J. E., 153 Dufferin St., Toronto.

Elkington, P. W., 47 Yonge St., Toronto.
Elliott, F. E., Toronto Carpet Mfg. Co., Ltd., Toronto.
Elliott, J., 75 Jackman Ave., Toronto.
English, J. J., C.A., Clarkson, Gordon & Dilworth, Toronto.
Faux, Claud, 1020A St. Clair Ave. West, Toronto.
Ferguson, W. S., C.A., 28 Kilbarry Road, Toronto.
Fierheller, C. H., 14 Strachan Ave., Toronto.
Forrester, W. J., 300 Commonwealth Bldg., Toronto.
Fraser, W. C., 64 Awde St., Toronto.
Grant, E. D., 240 Ashworth Ave., Toronto.
Greer, C. A., C.A., 702 Federal Bldg., Toronto.
Guilfoyle, H. E., C.A., 15 Wellington St. W., Toronto.
Gunn, Edmond, F.C.A., 25 Toronto St., Toronto.
Hamlin, E. L. B., 77 Stibbard Ave., Toronto.
Harper, E. W., C. A., 420 Federal Bldg., Toronto.
Harris, J. S., 52 Bloem Ave., Fairbank, Toronto.
Hetherington, H. M., 14-32 Alpine Ave., Toronto.
Higgins, F. P., F.C.A., 36 Toronto Street, Toronto.
Hill, E. E., Canadian National Carbon Co., Ltd., Toronto.
Hillman, H. P. L., C.A., 68 Rosedale Heights, Toronto.
Houston, G. H., 201 Carlaw Ave., Toronto.
Howard, A. G., Lincoln Meter Co., Ltd., Toronto.
Hubbard, L. E., International Business Machines Co., Ltd., Toronto.
Jamieson, H. T., F.C.A., 1405 Royal Bank Bldg., Toronto.
Jardine, T. S., United Drug Co., Ltd., Toronto.
Joly, J. H., 10 Front St. W., Toronto.
Keegan, J. P., Trusts & Guarantee Co., Toronto.
Lane, W. M., Lever Bros., Ltd., Toronto.
Lang, B. W., Box 158, Mimico.
Macdonald, A., Bank of Nova Scotia, 39 King St. W., Toronto.
MacDougall, R. A., 1131 Bloor St. W., Toronto.
Mapp, K. A., C.A., 28 Scott St., Toronto.
Marrow, T. H., 29 Rusholme Road, Toronto.
Merson, Geo. O., C.A., 347 Bay St., Toronto.
Merson, H. S., C.A., 510 Royal Bank Bldg., Toronto.
Millar, D. L., F. N. Burt Co., Ltd., Toronto.
Mitchell, L. W., The T. Eaton Co., Ltd., Toronto.
Muir, Jas., Income Tax Department, Lombard St., Toronto.
McCaffrey, W. A., Office Specialty Mfg. Co., Ltd., Newmarket.
McKee, J. M., International Business Machines, Ltd., Toronto.
McPherson, R. S., 1018 Federal Bldg., Toronto.
McQuillan, H. J., S. F. Stinson & Son, Toronto.
Nash, A. E., C.A., 15 Wellington St. W., Toronto.
Newth, R. W., Canada Printing Ink Co., Ltd., Toronto.
Oaten, R., The Gurney Foundry Co., Ltd., Toronto.
Patterson, C. A., 24 Evelyn Crescent, Toronto.
Patton, D. C., 183 George St., Toronto.
Pelling, C. H., C.A., 16 Swanwick Ave., Toronto.
Perrin, H., C.A., 15 Wellington St. W., Toronto.
Peters, G. A., C.A., 422 Federal Bldg., Toronto.
Pidduck, J. R., Neptune Meter Co., Ltd., Toronto.
Pierdon, W. G., 35 Langley Ave., Toronto.
Pointon, E. T., C.A., Edwards, Morgan & Co., Toronto.
Rae, Alan M., Massey-Harris Co., Ltd., Toronto.
Reynolds, G. C., 64 Natalie St., Toronto.
Scott, E. D., Marlatt Leather Co., Oakville.
Shepard, A. B., C.A., Thorne, Mulholland, Howson & McPherson, Toronto.
Shepherd, A. B., C.A., 1603 Royal Bank Bldg., Toronto.

COST AND MANAGEMENT

Shiach, H. A., C.A., 863 Bay St., Toronto.
Smith, R. S., Baldwin's Steel Corp., Ltd., Toronto.
Spence, J. W., Canadian Kodak Co., Ltd., Toronto.
Taylor, R. B., The Rowntree Co., Ltd., Toronto.
Taylor, W. D., F.C.A., 15 Wellington St. W., Toronto.
Tidy, A. R., 562 Ontario St., Toronto.
Turner, Jas., C.A., The T. Eaton Co., Ltd., Toronto.
Wade, Osler, F.C.A., 38 King St. W., Toronto.
Weir, Thos., C.A., 15 Wellington St. W., Toronto.
Wheeler, Wm., 17 Fernwood Park Ave., Toronto.
Williams, W. F., C.A., 499 College St., Toronto.
Williamson, R., F.C.A., 863 Bay St., Toronto.
Wright, L. V., 244 Bay St., Toronto.
Young, D. M., C.A., 1405 Royal Bank Bldg., Toronto.
Young, R. E., F.C.A., 297 Bay St., Toronto.

MONTREAL CHAPTER

Archambault, J. A., 30 St. Jacques St., Montreal.
Baker, E. C., 392 St. James St., Montreal.
Ballantyne, A., C.A., Marwick, Mitchell & Co., Montreal.
Belanger, L., C.P.A., 1527 Crescent St., Montreal.
Bernier, L. P., 4116 Rue St. Hubert, Montreal.
Booth, Wilfrid, 735 Wellington St., Montreal.
Bowden, Geo. T., The Steel Co. of Canada, Ltd., Montreal.
Brown, W. M., Canadian Explosives, Ltd., Montreal.
Burton, Geo. E., Room 619, Power Bldg., Montreal.
Cameron, D. A., 83 Craig St. W., Montreal.
Cameron, J. S., 121 Shearer St., Montreal.
Campbell, W. S., 609 Victoria Ave., Westmount, Montreal.
Carpentier, J. E., 232 St. James St., Montreal.
Carswell, Wm., C.A., Northern Electric Co., Montreal.
Clapperton, H. D., C.A., 80 St. Francois Xavier St., Montreal.
Cole, A. W., C.A., 164 St. James Street, Montreal.
Cotret, J. H. R. de, 103 Notre Dame St., Three Rivers.
Cox, M. M., C.A., Nesbitt, Thomson & Co., Ltd., Montreal.
Davies, E. W., 10 Victoria Sq., Montreal.
Dempster, Jas., C.A., 512 Power Bldg., Montreal.
DeTilley, Armand, 1192 St. Catherine St. E., Montreal.
Douglas, Hugh, Federated Press, Ltd., Montreal.
Farish, D. M., C.A., 121 Shearer St., Montreal.
Fernie, Frank, 225 Kensington Ave., Westmount, Montreal.
Giguere, A., 4400 Marquette St., Montreal.
Gowan, A. A., C.A., 17 St. John St., Montreal.
Grondin, Ludovic J., Franklin Montreal Motors, Ltd., Montreal.
Heald, J. L., Dominion Bridge Co., Ltd., Lachine, Que.
Henderson, Geo., Comptroller, Wayagamack Pulp & Paper Co., Ltd., Three Rivers.
Henderson, J. D., 253 Clifton Ave., Montreal.
Hirsch, A. T., 51 Durocher St., Montreal.
Hodgson, G. W., C.A., 750 Maplewood Ave., Montreal.
Howell, W. M., 330 Claremont Ave., Westmount, Montreal.
Hutchison, Jas., F.C.A., 80 St. Francois Xavier St., Montreal.
Johnson, R. R., Henry Birks & Son, Ltd., Montreal.
Jones, W. S., C.A., 606 Shaughnessy Bldg., 157 McGill St., Montreal.
Kerrin, H., L.A., C.P.A., 5980 Park Ave., Montreal.
King, F. J., 56 Old Orchard Ave., Notre Dame De Grace, Montreal.
LaLanne, J. A. de, C.A., 179 St. James St., Montreal.
Leroux, G. C., 3696 Mentana St., Montreal.
Loiselle, E. J., 1790 Queen Mary Road, Hampstead, Montreal.

Lortie, L. P., 436 West Hill Ave., Montreal.
MacDonald, Ross, 121 Shearer St., Montreal.
Masterson, J. P., 731 Querbes Ave., Outremont.
Miller, S. C., 15 Parkman Place, Westmount, Montreal.
More, W. W., 3312 Adams Street, Montreal.
Myles, John, 513 Oxford Ave., Notre Dame de Grace, Montreal.
McCrudden, H. E., 4250 Dorchester St., Montreal.
McElroy, F. C., 284 Parthenais St., Montreal.
McIver, F. M., Canadian Car & Foundry Co., Ltd., Montreal.
McKee, J. E., 1-3 Notre Dame St. W., Montreal.
O'Keefe, T. F., 3649 Durocher St., Apt. 11, Montreal.
Ostrander, N., 24 Royal Ave., Montreal, Que.
Painchaud, L. P., Buckley, Drouin Co., Ltd., Montreal.
Patton, D. R., C.A., R. Schurman & Co., Montreal.
Peckham, S. B., C.A., P. S. Ross & Sons, Montreal.
Pendock, K. G., C.G.A., 1290 Bernard Ave. W., Apt. 16, Montreal.
Peto, L. A., Canadian Car & Foundry Co., Ltd., Montreal.
Petrie, A. J. M., 120 St. James St., Montreal.
Racine, C. R., C. E. Frost & Co., Montreal.
Renaud, V., 880 St. Catherine St. W., Montreal.
Robitaille, E., 180 Rue St. Jacques, Montreal.
Rowland, A. H., 29 Cote des Neiges Road, Montreal.
Scott, G. W., C.A., 152 Notre Dame St. W., Montreal.
Smith, Robert, 125 Kenaston Ave., Mount Royal, Que.
Sugars, Prof. R. M., School of Commerce, McGill University, Montreal.
Thompson, R. R., C.A., 487 Argyle Ave., Westmount, Que.
Thorpe, T. C., T. Eaton Co., Ltd., Montreal.
Trottier, L. J., 4516 Delorimier Ave., Montreal.
Turner, W. H., 1640 Ducharme Ave., Outremont, Montreal.
Vroom, H. H., 121 Shearer St., Montreal.
Whitten, C. E., Canadian Paperboard Co., Ltd., Montreal.
Will, W. A., 10700 Lajeunesse St., Montreal.
Williams, James, Maritime Fish Corp., Ltd., Montreal.
Woodall, W. T., 206A Transportation Bldg., Montreal.
Wright, P. W., 31 Brock Ave. South, Montreal West.

HAMILTON CHAPTER

Bell, D. H., Tallman Brass & Metal Co., Ltd., Hamilton.
Broadhead, N. H., 15 Mapleside Ave., Hamilton.
Conway, J. J., 21 Main St. E., Hamilton.
Davison, E. W., Mewburn & McHaffie, Hamilton.
Dickson, B. H., Dominion Glass Co., Ltd., Hamilton, Ont.
Donald, Geo. E., Canada Wire & Iron Goods Co., Hamilton.
Finck, A. J., Moto-Meter Company, Ltd., Hamilton.
Goudy, J. E., 106 Blake St., Hamilton.
Gourlay, A. J., 13 Central Ave., Hamilton.
Keen, A. E., C.A., 501 Bank of Hamilton Bldg., Hamilton.
Le Brocq, S. E., The Steel Co. of Canada, Hamilton.
Long, M. I., C.A., 809 Canadian Bank of Commerce Chambers, Hamilton.
Love, R. E., The Hoover Co., Ltd., Hamilton.
Matchett, M. W., E. D. Smith & Sons, Ltd., Hamilton.
Meeke, G. D., Otis-Fensom Elevator Co., Ltd., Hamilton.
Mouncey, A. J., 137 Balmoral Ave., Hamilton.
Osborne, A. E., Laidlaw Bale-Tie Co., Ltd., Hamilton.
Richardson, S. G., C.A., 501 Canadian Bank of Commerce Chambers, Hamilton.
Robins, S. W., Hamilton Hydro-Electric Comm., Hamilton.

Ross, H. M., Mercury Mills, Ltd., Hamilton.
Scott, C. S., F.C.A., Spectator Bldg., Hamilton.
Smith, G. E. F., 501 Can. Bank of Commerce Chambers, Hamilton.
Tallman, H. R., 58 Delaware Ave., Hamilton.
Thompson, E. B., Duncan Lithographing Co., Ltd., Hamilton.
Walkinshaw, A. H., E. T. Wright Co., Ltd., Hamilton.
Watson, C. S., 23 Homewood Ave., Hamilton.
Wigle, C. E., Howell Litho Co., Hamilton.

BRACEBRIDGE, ONT.

Payne, H. E. M., J. D. Shier Lumber Co., Ltd.

BRANTFORD, ONT.

Foulds, N. C., Cockshutt Plow Co., Ltd.

CALGARY, ALTA.

Sutherland, Jas. B., 430 Lougheed Bldg., Calgary.

CAPE MADELINE, QUE.

Louthood, R. W., St. Maurice Valley Corp., Ltd.

COBOURG, ONT.

Kidd, D. C., Douglas Packing Co.

DOLBEAU, QUE.

Evans, John Glynne, Lake St. John Power & Paper Co.

DRUMMONDVILLE, QUE.

Eddy, J. C., 176 Lindsay St.

DUNNVILLE, ONT.

Haywood, L. J., Monarch Knitting Co., Ltd.

EDMONTON, ALTA.

Empey, W. F., 11508 95th St.
McCannel, M .C., 210 McLeod Bldg.
Nicholson, R. H., The E. C. D. Co., Ltd.
Patriquin, H. O., 431 Tegler Bldg.
Thomson, E. D. C., 408 Tegler Bldg.

ESPANOLA, ONT.

Shea, J. J.

FREDERICTON, N.B.

Hoben, H. G.

GUELPH, ONT.

Zufelt, D. W., Dalyte Electric Ltd.

HEBERTVILLE STATION, LAKE ST. JOHN, QUE.

Kearney, S. J., Staff House, Shawinigan Engineering Co.
O'Carroll, F. X., Staff House.

KINGSTON, ONT.

Daly, G. W., Canadian Locomotive Co., Ltd.
Smails, R. G., Queen's University.
Walker, C. E., Queen's University.

KITCHENER, ONT.

Tailby, Ernest, L. A., Canadian Bank of Commerce Chambers.

LETHBRIDGE, ALTA.

Gardner, R. W., 207 Sherlock Bldg.

LONDON, ONT.

Ware, F. N., The Murray Shoe Co., Ltd.

OTTAWA, ONT.

Blatch, G. L., 193 Sparks St.
Clark, A. S., 114 Wellington St.

QUEBEC, QUE.

Buzzell, L. M., 138 St. Peter St.
Wilkie, J. H., Price Bros. & Co., Ltd.

SHERBROOKE, QUE.

Brooks, B. E., P.O. Box 729.

SMITH'S FALLS, ONT.

Douglas, J. C., Frost & Wood Company.

STRATFORD, ONT.

Malone, H. J., R. M. Ballantyne, Ltd.

VANCOUVER, B.C.

Field, Fred, 510 Hastings Ave. W.
Giske, E. H., 1104 Dominion Bldg.
Smith, Walter H., 612 Board of Trade Bldg., Pender St. W.
Walkden, W. E., 612 Board of Trade Bldg., Pender St. W.

VICTORIA, B.C.

Hinton, H. G., Geo. A. Touche & Co.

WINDSOR, ONT.

Fitzgerald, A. S., 3 Ouellette Ave., Suite 201.

WINNIPEG, MAN.

Gilbert, F. C., C.A., 905 Electric Railway Chambers.
Laird, W. C., C.A., 905 Electric Railway Chambers.
Latter, H., Vulcan Iron Works, Ltd.
Morden, H. J., C.A., 236 Curry Bldg., Winnipeg.
Mundell, W. J., Ogilvie Flour Mills Co., Ltd.
Parton, John, C.A., 400 Great West Permanent Bldg.
Phare, G. A., Royal Crown Soaps, Ltd.
Ronald, W. S., C.A., 804 Lindsay Bldg.

WOODSTOCK, ONT.

McEwen, Alfred, Canada Furniture Manufacturers, Ltd.

JUNIOR MEMBERS

TORONTO CHAPTER

Beacham, J. J., National Cash Register Co., Ltd., Toronto.
Bunt, H. E., Lever Bros., Ltd., Toronto.
Clark, W. C., Gurney Foundry Co., Ltd., Toronto.
Davis, J. C., International Business Machines, Ltd., Toronto.
Harcombe, F. J., Dunlop Tire & Rubber Co., Toronto.
Hodgson, W. R., Canadian Kodak Co., Ltd., Mount Dennis, Toronto.
Layzell, R., Sangamo Electric Co., Ltd., Toronto.
Robertson, W. A., Lever Bros., Ltd., Toronto.
Roe, M. J., Sangamo Electric Co., Ltd., Toronto.
Rowe, J. A. W., Canadian Kodak Co., Ltd., Mount Dennis, Toronto.
Steel, G. E., Sangamo Electric Co., Ltd., Toronto.
Sweeting, A. E., Gurney Foundry Co., Ltd., Toronto.
Warnes, C., Canadian Kodak Co., Ltd., Mount Dennis, Toronto.

MONTREAL CHAPTER

Bailey, Alfred, 121 Shearer St., Montreal.
Gallagher, E. L., Birks & Son, Henry, Montreal.
Gates, F. E. H., 4289 Dorchester St. W., Montreal.
Greenfield, F. J., Steel Company of Canada, Montreal.
Harrison, Dent, Jr., P. S. Ross & Sons, Montreal.
Howe, Jonas, Graphic Arts Section, Can. Mfrs.' Association, Montreal.
Latimer, J. M., 3844 Newmarch St., Verdun, Quebec.
McNeil, E. C., Northern Electric Co., Ltd., Montreal.
Paterson, John, 80 St. Francois Xavier St., Montreal.
Ramsay, A. F., 326 Brock Ave., Montreal West.
Swayne, A. A., Steel Co. of Canada, Montreal.
Wilkinson, J. J., Chas. Walmsley Co. of Canada, Longueuil, Que.

HAMILTON CHAPTER

Badeau, N. F., Dominion Glass Co., Ltd., Hamilton.
Bechill, N. V., International Harvester Co. of Can., Ltd., Hamilton.
Berquist, C. W., Hamilton Hydro-Electric Comm., Hamilton.
Croucher, P., 14 Webber Ave., Hamilton, Ont.
Dawson, R., The Hoover Co., Ltd., Hamilton.
Ferguson, J., Moto-Meter of Canada, Ltd., Hamilton.
Green, S. H., Canada Wire & Iron Goods Co., Hamilton.
Harsford, R., The Hoover Co., Ltd., Hamilton.
Lee, F. A., The Hoover Co., Ltd., Hamilton.
Prior, P. G., Wagstaffe, Ltd., Hamilton.
Race, F. C., International Harvester Co. of Can., Ltd., Hamilton.
Roehm, F. W., Canadian Canners, Ltd., Mount Hamilton, Ont.
Smith, Norman, O. T. Hamilton, Hydro-Electric Comm., Hamilton.
Sparham, W. C., International Harvester Co. of Can., Ltd., Hamilton.
Willrich, A. T., Tallman Brass & Metal, Ltd., Hamilton.
Woolman, C. N., International Harvester Co. of Can., Ltd., Hamilton.

WILL MEET WITH LITHOGRAPHERS

A Joint meeting of the Canadian Society of Cost Accountants and the Canadian Lithographers' Association is being arranged to take place in Toronto on March 26th, for the discussion of cost work in the lithographing industry. Members are invited to attend. Further information may be obtained from the office of the Society, 81 Victoria Street, Toronto, Telephone, Elgin 8914.